REMARKS

Claims 1 and 4-21 are pending in this application. Claims 11-20 are withdrawn. By this Amendment, claims 1, 4-14 and 21 are amended. The amendments to claims 1, 4-14 and 21 are supported at least by page 1, lines 9-35 and page 12, line 36 to page 13, line 4 of the original specification. Withdrawn claim 14 is amended for antecedence. No new matter is added by this Amendment.

I. Interview

Applicants appreciate the courtesies shown to Applicants' representative by Examiner Leonard in the April 27, 2010 interview. Applicants' separate record of the substance of the interview is incorporated into the following remarks.

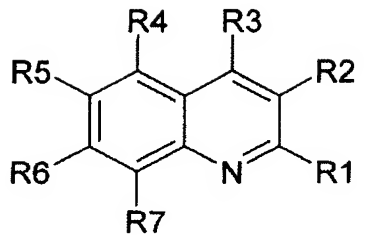
II. Rejection Under 35 U.S.C. §103(a)

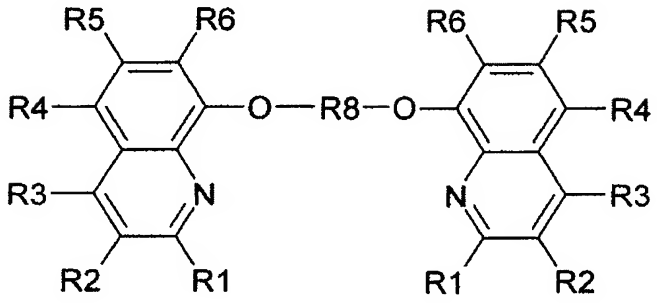
Claims 1, 4-10 and 21 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 4,788,083 ("Dammann") in view of U.S. Patent No. 3,635,906 ("Jayawant"). Applicants respectfully traverse the rejection.

1. Dammann And Jayawant Describe Two-Pack Polyurethane Compositions

Dammann and Jayawant are both directed to two-pack polyurethane compositions, wherein the material used to form the polyurethane compositions are contained in two separate packs. As such, any combination of these two references would not have led one to the one-pack polyurethane composition of claim 1.

Claim 1 recites a one-pack polyurethane composition comprising a single pack, the single pack comprised of: at least one polyurethane prepolymer having terminal isocyanate groups, prepared from at least one polyisocyanate with at least one polyol; and at least one catalyst system obtained from at least one bismuth compound and at least one aromatic nitrogen compound, wherein the aromatic nitrogen compound has the formula A or B,

A 

B 

where: R1, R2, R3, R4, R5 and R6 each independently of one another is H, methyl, ethyl, propyl, isopropyl, n-butyl, isobutyl, tert-butyl, C_5 to C_{12} alkyl, COOH, COOR' or halogen, R7 is a C_1 to C_8 alkyl, a hydroxyl group (OH), O-$(CH_2CH_2O)_x$-R' with the values for x of 1-6, or O-$(CH_2CH(CH_3)O)_x$-R' or a positional isomer thereof, with the values for x of 1-6, R8 is alkylene or alkylene ether, R' is alkyl, and R" is alkyl or alkyl with heteroatoms.

As described in the present specification, "two-pack polyurethane compositions", such as those described in Dammann and Jayawant, are comprised of two separate packs containing (1) isocyanates and (2) isocyanate-group-reactive compounds, such as an amine. However, "one-pack polyurethane compositions", such as those recited in the present claims, are compositions that comprise a single pack containing a reactive isocyanate, and cure under the influence of water in the air. "One-pack polyurethane compositions" are further distinguished from "two-pack polyurethane compositions" in that "one-pack polyurethane compositions" cure at a slower rate than "two-pack polyurethane compositions." See page 1, lines 10-35 of the present specification.

Because one-pack polyurethane compositions do not require the additional isocyanate-group-reactive compound, "one-pack polyurethane composition", although recited in the

preamble of claim 1, provides "life, vitality and meaning" to claim 1. Claim 1 thus effectively excludes any two-pack composition, including those recited in Dammann and Jayawant.

Dammann describes a polyurethane coating and primer composition prepared from a catalyzed reaction mixture comprised of (1) a hydroxyl containing compound, (2) an isocyanate or polyisocyanate, and (3) a complex catalyst formed from the combination of a bismuth or tin catalyst, a complexing agent, such as a mercaptan, in the presence of tertiary amine. See Dammann, the Abstract, col. 11, lines 45-65, col. 2, lines 50-58.

As illustrated more specifically in the reaction mechanism in Figure 1 of Dammann, catalyst species II is a tin-organic catalyst having mercapto ligands. See Dammann, Figure 1 and col. 4, lines 29-40. Upon the addition of excess mercapto compounds, an equilibrium reaction is established between catalyst species II and catalyst species III, wherein the tin metal is converted from a tetracoordinate species to a hexacoordinate species. See Dammann, col. 4, lines 41-47.

Furthermore, Dammann explicitly states that inactive catalyst species III is "the novel catalyst species" described in Dammann, and thus is the catalyst species that is responsible for "excellent pot life." See Dammann, col. 4, lines 47-52. Dammann further describes that the addition of a trigger, such as an amine or heat, converts inactive catalyst species III to a more reactive catalyst species (i.e., catalyst species IV). See Dammann, col. 4, lines 53-62.

In view of the above explanation, Dammann is clearly referring to a two-pack polyurethane composition (instead of a one-pack polyurethane composition) because Dammann describes the addition of a tertiary amine activator (i.e., a chelating ligand) to convert inactive catalyst species III to active catalyst species IV, wherein the active catalyst species IV triggers the crosslinking reaction.

Jayawant describes a reaction of a polyol with a polyisocyanate. See Jayawant, col. 1, lines 66-72. Jayawant thus describes the reaction of a two-pack composition, and thus does not describe a one-pack composition.

Because Dammann and Jayawant are both directed to two-pack polyurethane compositions, these compositions are excluded from the one-pack polyurethane composition of claim 1.

Jayawant further describes using a tin catalyst (i.e., not a bismuth catalyst as recited in claim 1) that has been modified with a "β-hydroxy nitrogen-heterocyclic fused aromatic", such as 8-hydroxyquinoline, to catalyze the reaction of a polyhydroxy compound (i.e., a polyol) and a polyisocyanate. See Jayawant, Abstract, col. 4, lines 45-62 and col. 7, lines 43-73. In other words, Jayawant describes adding the functionalized tin catalyst during the reaction of the polyol and polyisocyanate.

However, in the one-pack polyurethane composition recited in claim 1, a polyol and a polyisocyanate are used to form the at least one polyurethane prepolymer having terminal isocyanate groups (i.e., an isocyanate functionalized polyurethane prepolymer). The catalyst system is then added to the isocyanate-functionalized polyurethane prepolymer to catalyze the reaction of prepolymer with water. In other words, claim 1 recites that the catalyst system to expedite the reaction of the prepolymer with the water. The catalyst system of claim 1 is thus added to an entirely different chemical reaction than the reaction described in Jayawant.

For this reason, and because Jayawant describes adding 8-hydroxyquinoline to a different metal catalyst (tin instead of bismuth), one having ordinary skill in the art would not have been provided with any reason or rationale, when reviewing both Dammann and Jayawant, to have combined the 8-hydroxyquinoline of Jayawant with the bismuth catalyst described in Dammann, with any reasonable expectation of success.

2. Dammann And Jayawant Are Not Analogous To Each Other

The Patent Office's conclusion on page 3 of the Office Action is incorrect. Specifically, the Examiner alleges that Dammann and Jayawant are analogous because both describe "using chelate-forming compounds that have the effect of delaying initiation of reaction between polyisocyanates and organic polyhydroxyl compounds." See Office Action, page 3.

However, Dammann describes the opposite scenario for Jayawant because Dammann describes the activation (not delaying initiation or activation) of an inert mercaptide catalyst. For this additional reason, one having ordinary skill in the art would not have combined the 8-hydroxyquinoline of Jayawant with the bismuth catalyst of Dammann.

3. Evidence Of Unexpected Results

As discussed in the Amendment, filed on August 24, 2009, Dammann or Jayawant do not describe the unexpected results regarding a low increase in viscosity (which translates to a good storage stability) and a fast cure (skin formation time) obtained from a one-pack polyurethane composition, such as the compositions recited in claim 1.

The Patent Office alleged that because the viscosity was a property not explicitly recited in the claims, the viscosity was allegedly not commensurate in scope with the present claims.

Applicants respectfully submit that the Patent Office incorrectly alleges that the property used to show unexpected results must be recited in the present claims. MPEP 716.02(d) recites that:

> Whether the unexpected results are the result of unexpectedly improved results or a property not taught by the prior art, the "objective evidence of nonobviousness must be commensurate in scope with the claims which the evidence is offered to support." In other words, the showing of unexpected results must be reviewed to see if the results occur over the entire claimed range. *In re Clemens*, 622 F.2d 1029, 1036, 206 USPQ 289, 296 (CCPA 1980).

MPEP 716.02(d) thus indicates that the "evidence" must be commensurate in scope with the present claims and does not require the unexpected result from the evidence to be recited in the claims. During the interview, the Patent Office agreed that the evidence of unexpected results does not need to be included in the claims.

The evidence of unexpected results is summarized in the present specification. In particular, Table 1 of the specification summarizes a comparison between three different bismuth-catalyzed polyurethane compositions (Examples 1, 7 and 9) having a catalyst system stabilized with various compounds L and one bismuth-catalyzed polyurethane composition having a catalyst system that is unstabilized (Example 10). See page 18 of the specification. Compound L, for example, was designated as (1) tetraethylene glycol bis(8-quinolyl) ether (Example 1), (2) 8-hydroxyquinoline (Example 7) and (3) quinoline (Example 9). Example 1 and Example 7 are representative of the embodiment described in claim 1 of the present application. However, Example 9 (a comparative example) is representative of the embodiment described in Dammann and Example 10 (a comparative example) is a bismuth-catalyzed polyurethane composition having a catalyst system without a stabilizer.

Example 7 was prepared by charging a glass flask with bismuth tris(neodecanoate) in neodecanoic acid and 8-hydroxyquinoline (mole ratio 6:1; bismuth content 20 weight percent) and diluting the mixture diisodecyl phthalate to a total bismuth content of 2.0 weight percent. See page 16, lines 3-10 of the specification. The mixture was then placed under a dry nitrogen purge and heated to 100°C for one hour and mixed into an isocyanate-terminated polyurethane prepolymer. See page 16, lines 10-18. The composition of the isocyanate-terminated prepolymer is described at page 16, lines 19-26 of the specification. After mixing with the isocyanate-terminated prepolymer, the resulting composition was immediately

introduced into internally coated aluminum tubes and stored in an oven at a temperature of 60°C. See page 16, lines 27-30 of the specification.

Example 1 was prepared in the exact same manner as Example 7, except that 8-hydroxyquinoline was replaced with tetraethylene glycol bis(8-quinolyl) ether. See page 16, line 3 to page 17, line 20 and Table 1 of the present specification.

Example 9 (a comparative example) was prepared in the exact same manner as Example 7, except that 8-hydroxyquinoline was replaced with quinoline. See page 16, line 3 to page 17, line 20 and Table 1 of the present specification.

Example 10 (a comparative example) was prepared in the exact same manner as Example 7, except that no compound L was added. See page 16, line 3 to page 17, line 20 and Table 1 of the present specification.

The skin formation time and increase in viscosity were measured for Example 1, Example 7, Example 9 and Example 10. The details for determining the skin formation time are summarized at page 16, line 34 to page 17, line 2 of the original specification. The details for the increase in viscosity are summarized at page 17, lines 3-8 of the original specification. These results are summarized below in Table 1 (and Table 1 of the original specification).

Table 1: Skin Formation Time and Increase In Viscosity Results For Example 1, 7, 9 And 10

	Compound L	Skin Formation Time (min)	Increase In Viscosity (%)
Example 1	tetraethylene glycol bis(8-quinolyl) ether	47	53
Example 7	8-hydroxyquinoline	84	16
Example 9 (comparative)	quinoline	85	95
Example 10 (comparative)	NONE	79	121

As seen from above, while the skin formation time remained relatively similar between Examples 7, 9 and 10, a bismuth-catalyzed polyurethane composition comprised of a catalyst system stabilized with 8-hydroxyquinoline (Example 7) instead of quinoline (Example 9) or no compound L (Example 10) resulted in an unexpected and much lower increase in viscosity. Furthermore, the skin formation time and the increase in viscosity was reduced for a bismuth-catalyzed polyurethane composition comprised of a catalyst system stabilized with tetraethylene glycol bis(8-quinolyl) ether instead of quinoline (Example 9) or no compound L (Example 10).

The above results thus demonstrate a reduced increased in the viscosity of the polyurethane composition, which effectively translates to increased storage stability. Both Dammann and Jayawant refer to pot life (see Dammann, col. 2, lines 59-62 and Jayawant, col. 1, lines 66-71), which is entirely different than storage stability. Pot life is the time after mixing the materials of a two-pack polyurethane composition, such as those described in Dammann, until the composition can no longer be used as an adhesive.

Furthermore, Jayawant does not describe that the viscosity of the polyurethane decreased by the addition of 8-hydroxyquinoline (instead of using the quinoline of

Dammann). Jayawant instead describes that the presence of the organo-tin catalyst (i.e., the 8-hydroxyquinoline added to tin) is used to delay the reaction between the organic polyisocyanate and an organic polyhydroxy compound (referred to in Jayawant as "time-lapse catalysis"), thereby extending the pot-life without retarding the cure rate. See Jayawant, col. 1, lines 66-71 and col. 8, lines 19-24.

For this additional reason, Dammann and Jayawant do not describe the unexpected benefit of increased storage stability (i.e., reduction in the increase in viscosity).

Thus, Dammann and Jayawant do not describe the unexpected benefit of a much lower increase in viscosity for a bismuth-catalyzed polyurethane composition having a catalyst system obtained with the compounds recited in Formula A and B of claim 1.

4. Conclusion

Independent claim 1 would not have been obvious from Dammann and Jayawant for at least the above reasons.

Withdrawal of the rejection is requested.

III. Rejoinder

In view of the foregoing amendments and arguments, Applicants respectfully request that upon allowance of claims 1, 4-10 and 21, claims 11-20 be rejoined with the present application and similarly allowed.

IV. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1 and 4-21 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

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